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Point and Area Source Checklist for Evaluating 1982 Ozone Sip Emission Inventories

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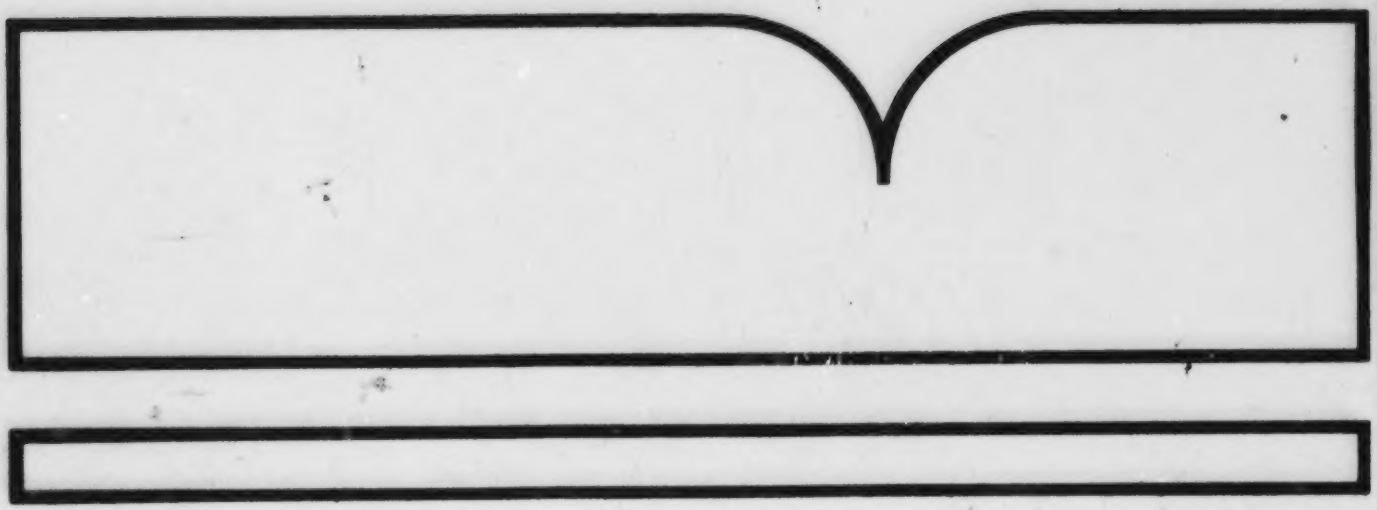

U.S. Department of Commerce
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PB82-237454

POINT AND AREA SOURCE

CHECKLIST

FOR EVALUATING 1982 OZONE SIP EMISSION INVENTORIES

AIR MANAGEMENT TECHNOLOGY BRANCH

MDAD, OAQPS

ENVIRONMENTAL PROTECTION AGENCY

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This document contains a checklist to assist Regional Offices, States and local agencies in the planning, compilation, and review of inventories of reactive volatile organic compounds (RVOC) and NO_x prepared for use in the 1982 ozone SIPs. The main focus of this document is on point and (nonhighway) area source inventories. This document complements Guidelines for Review of Highway Source Emission Inventories for 1982 State Implementation Plans (EPA-440/12-80-002).

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INTRODUCTION

This document contains a checklist to assist Regional Offices, States and local agencies in the planning, compilation and review of inventories of reactive volatile organic compounds (RVOC) and NO_x prepared for use in the 1982 ozone SIPs. The main focus of this document is on point and (nonhighway) area source inventories. This document complements Guidelines for Review of Highway Source Emission Inventories for 1982 State Implementation Plans (EPA-440/12-80-002).

The purpose of this checklist is to help the user assure that his inventory is accurate and complete, that proper procedures have been followed and that his inventory fulfills EPA's Final Emission Inventory Requirements for 1982 Ozone State Implementation Plans (EPA-450/4-80-016). Because most areas will be employing city-specific EKMA as a source/receptor relationship in their 1982 ozone SIPs, the inventories used in these modeling analyses need only be resolved spatially to the county (or equivalent) level and temporally to a typical summer weekday. As such, this checklist is primarily applicable to less detailed inventories used in city-specific EKMA. This checklist will also be applicable to inventories used in photochemical grid models; however, additional checks will be needed in such applications because these inventories must be further resolved both spatially and temporally, and since RVOC must be broken out by reactive classes. Agencies using photochemical grid models should be aware of the additional inventory requirements, which are described in Procedures for the Preparation of Emission Inventories for Volatile Organic Compounds, Volume II: Emission Inventory Requirements for Photochemical Air Quality Simulation Models (EPA-450/4-79-018).

This checklist is comprised of a series of items (checks, questions, etc.) that the user should consider at appropriate stages of inventory development. Also included are various rules-of-thumb the user may employ to check the reasonableness of the emission estimates developed in the inventory. If this checklist is followed, and all the items therein are considered, a major step will have been taken toward quality assuring the point and area source inventories.

All of the information in this checklist is contained in Procedures for the Preparation of Emission Inventories for Volatile Organic Compounds: Volume I, Second Edition (EPA-450/2-77-028), Final Emission Inventory Requirements for 1982 Ozone State Implementation Plans (EPA-450/4-80-016), and VOC/NO_x Emission Inventory Requirements for 1982 SIPs, Workbook (OAQPS, EPA-October 1980). The user is urged to consult these references for more details on the subjects covered in this checklist. Most of these considerations are demonstrated in Example Emission Inventory Documentation for 1982 Ozone State Implementations Plans (SIPs) (EPA-450/4-80-033).

GENERAL INVENTORY CONSIDERATIONS

1. Responsibilities of all agencies involved in the SIP process should be defined. Who will be compiling the point and area source inventories? The highway vehicle inventories? Who will compile the emission totals from each of these component inventories into a format that can be used in the modeling analysis? Who will be conducting the modeling analysis? Who will be preparing

the SIP? Where several agencies are involved, and especially where the inventory area extends into several Regions or States, this delineation of responsibilities is critical as early as possible.

2. The geographical area of coverage should be delineated as early as possible during the inventory planning process. Inventory personnel should consult with those performing the modeling analysis to make sure the area of coverage includes all potential modeling trajectories. If uncertainty exists regarding the modeling analysis area, as much area should be covered around the urban core as possible within available resources.

3. Spatial resolution must be defined at the outset of the inventory. At a minimum, spatial resolution at the county level is required for city-specific EKMA. Resolution to subcounty or county equivalent levels (townships, cities, grids, etc.) is acceptable for EKMA, and necessary if a photochemical grid model will be employed.

4. Emissions should be temporally resolved to a typical summer weekday for use in city-specific EKMA. For consistency, a typical summer day is defined as one during the June through August time period. It is sufficient for EKMA to develop daily (24 hour) emissions totals, however, hourly emission patterns are certainly acceptable. If a photochemical grid model will be applied, resolution to individual hours of the day is necessary.

5. City-specific EKMA requires estimates of total reactive VOC. Non-reactive VOC must be excluded from these totals. If a photochemical grid model will be used, VOC must be broken out into a number of reactive classes.

POINT SOURCE CONSIDERATIONS

1. A point source cutoff level should be defined. Different cutoff levels may be defined for various source categories. At a minimum, EPA requires all sources (plants or facilities) that emit more than 250 kg/day of RVOC or NO_x (actual emissions) shall be inventoried as point sources. Lower cutoff levels are encouraged for RVOC, especially for all sources expected to be covered by reasonably available control technology (RACT).

2. The point source listing should be compared with EPA's Directory of Volatile Organic Compound Sources Covered By Reasonably Available Control Technology (RACT) Requirements: Volumes I-III (EPA-450/4-80-007a,b,c). Omissions from the inventory should be considered for inclusion in the point source listing. Other local industrial directories, such as may be available from departments of labor or industry, should likewise be checked (especially for identifying non-CTG sources for which RACT may be available). Table 1 shows the major VOC source categories that should be included.

3. Small industrial sources emitting below the cutoff level should not be ignored. If not added to the point source inventory, they should be considered collectively as area sources. Techniques are described in Volume I for (1) determining if a significant number of sources exist in a particular source category that are not covered in the inventory and (2) collectively

TABLE 1
MAJOR POINT SOURCES OF VOLATILE ORGANIC COMPOUNDS

STORAGE, TRANSPORTATION AND MARKETING OF VOC

- Oil and Gas Production and Processing
  - Storage
  - Fugitives
  - Other Process Units (Specify)
- Tank Farms
  - Fixed Roof Tanks
  - External Floating Roof Tanks
    - Primary Seals
    - Secondary Seals
  - Internal Floating Roof Tanks
- Bulk Gasoline and VOC Terminals
  - Leaks from Valves, Flanges Meters, Pumps
  - Vapor Collection Losses
  - Vapor Control Unit Losses
  - Filling Losses from Uncontrolled Loading Racks
  - Tank Truck Vapor Leaks from Loading of Gasoline
  - Non-Tank Farm Storage
- Gasoline Bulk Plants
  - Gasoline Bulk Storage
  - Loading and Unloading Racks (Controlled and Uncontrolled)
  - Tank Truck Vapor Leaks from Loading and Unloading of Gasoline
  - Leaks from Valves, Flanges, Meters, Pumps
- Barge and Tanker Transfer
  - Gasoline Loading/Barge
  - Crude Oil Ballasting/Tanker
- Barge and Tanker Cleaning

INDUSTRIAL PROCESSES

- Petroleum Refineries
  - Process Drains and Wastewater Separators
  - Vacuum Producing Systems
  - Process Unit Turnarounds
  - Fugitive Leaks from Seals, Valves, Flanges
    Pressure Relief Devices, Drains
  - Other Process Emissions Such as Heaters, Boilers,
    Cat Cracker Regenerators (Specify)
- Lube Oil Manufacture

TABLE 1 (CTD.)

Pharmaceutical Manufacture
- Process Units Such as Vacuum Dryers, Reactors, Distillation Units, Filters, Extractors, Centrifuges, Crystallizers
- Major Production Equipment Such as Exhaust Systems and Air Dryers
- Storage and Transfer
- Other Process Units (Specify)

Rubber Tire Manufacture
- Undertread and Sidewall Cementing
- Bead Dipping
- Bead Swabbing
- Tire Building
- Tread End Cementing
- Green Tire Spraying
- Tire Curing
- Solvent Mixing
- Solvent Storage
- Other Process Units (Specify)

Styrene Butadiene Rubber Manufacture
- Blowdown Tanks
- Steam Stripper
- Prestorage Tanks
- Other Process Units (Specify)

Vegetable Oil
- Oil Extraction and Desolventization
- Meal Preparation
- Oil Refining
- Fugitive Leaks
- Solvent Storage
- Other Process Units (Specify)

Organic Chemical Manufacture
- Fugitive Leaks from Seals, Valves, Flanges, Pressure Relief Devices, Drains
- Air Oxidation Units
- Waste Water Separators
- Storage and Transfer
- Other Process Units (Specify)

Polymer and Resin Manufacture
- Catalyst Preparation
- Reactor Vents
- Separation of Reactants, Solvents and Diluents from Product
- Raw Material Storage
- Solvent Storage
- Other Process Units (Specify)

TABLE 1 (CTD.)

Plastic Parts Manufacture
- Mold Release
- Solvent Consumption
- Adhesives Consumption
- Other Process Units (Specify)

Inorganic Chemical Manufacture
- Fugitive Leaks from Seals, Valves, Flanges, Pressure Relief Devices, Drains
- Storage and Transfer
- Other Process Units (Specify)

Fermentation Processes
- Fermentation Tank Venting
- Aging/Wine or Whisky
- Other Process Units (Specify)

Iron and Steel Manufacture
- Coke Production
  - Coke Pushing
  - Coke Oven Doors
  - Coke Byproduct Plant
  - Coke Charging
  - Coal Preheater
  - Topside Leaks
  - Quenching
  - Battery Stacks
- Sintering
- Electric Arc Furnaces
- Other Process Units (Specify)

Synthetic Fiber Manufacture
- Dope Preparation
- Filtration
- Fiber Extrusion - Solvent Recovery
- Takeup Stretching, Washing, Drying, Crimping, Finishing
- Fiber Storage - Residual Solvent Evaporation
- Equipment Cleanup
- Solvent Storage
- Other Process Units (Specify)

INDUSTRIAL SURFACE COATING

Large Appliances
- Cleaning and Pretreatment
- Prime Spray, Flow, or Dip Coating Operations
- Topcoat Spray
- Coating Mixing
- Coating and Solvent Storage
- Equipment Cleanup
- Other Process Emissions (Specify)

TABLE 1 (CTD.)

Magnet Wire
- Cleaning and Pretreatment
- Coating Application and Curing
- Coating Mixing
- Coating and Solvent Storage
- Equipment Cleanup
- Other Process Emissions (Specify)

Automobiles and Light Duty Trucks
- Cleaning and Pretreatment
- Prime Application, Electro deposition, Dip or Spray
- Prime Surfacting Operations
- Topcoat Operation
- Repair Topcoat Application Area
- Coating Mixing
- Coating and Solvent Storage
- Equipment Cleanup
- Other Process Emissions (Specify)

Cans
- Cleaning and Pretreatment
- Two Piece and Exterior Base Coating
- Interior Spray Coating
- Sheet Basecoating (Interior)
- Sheet Basecoating (Exterior)
- Side Seam Spray Coating
- End Sealing Compound
- Lithography
- Over Varnish
- Coating Mixing
- Coating and Solvent Storage
- Equipment Cleanup
- Other Process Emissions (Specify)

Paper
- Coating Operations
- Coating Mixing
- Coating and Solvent Storage
- Equipment Cleanup
- Other Process Emission (Specify)

Coil Coating
- Prime Coating
- Finish Coating
- Solvent Mixing
- Solvent Storage
- Equipment Cleanup
- Other Process Emissions (Specify)

TABLE 1 (CTD.)

Fabric
- Coating Operations
- Coating Mixing
- Coating and Solvent Storage
- Equipment Cleanup
- Other Process Emissions (Specify)

Wood Furniture
- Coating Operations
- Coating Mixing
- Coating and Solvent Storage
- Other Process Emissions (Specify)

Metal Furniture
- Cleaning and Pretreatment
- Coating Operations
- Coating Mixing
- Coating and Solvent Mixing
- Equipment Cleanup
- Other Process Emissions (Specify)

Flatwood Products
- Filler
- Sealer
- Basecoat
- Topcoat
- Inks
- Coating Mixing
- Coating and Solvent Storage
- Equipment Cleanup
- Other Process Emissions (Specify)

Plastic Parts Painting
- Cleaning and Pretreatment
- Coating Operations, Flow, Dip, Spray
- Coating Mixing
- Coating and Solvent Storage
- Equipment Cleanup
- Other Process Emissions (Specify)

Large Ships
- Cleaning and Pretreatment
- Prime Coat Operation
- Topcoat Operation
- Coating Mixing
- Coating and Solvent Storage
- Equipment Cleanup
- Other Process Emissions (Specify)

TABLE 1 (CTD.)

- Large Aircraft
  - Cleaning and Pretreatment
  - Prime Coat Operation
  - Topcoat Operating
  - Coating and Solvent Storage
  - Equipment Cleanup
  - Other Process Emissions (Specify)
- Miscellaneous Metal Parts and Products
  - Cleaning and Pretreatment
  - Coating Operations, Flow, Dip, Spray
  - Coating Mixing
  - Coating and Solvent Storage
  - Equipment Cleanup
  - Other Process Emissions (Specify)

OTHER SOLVENT USE

- Dry Cleaning
- Degreasing
  - Open Top Vapor Degreasing
  - Conveyorized Degreasing - Vapor
  - Conveyorized Degreasing - Cold Cleaning
- Solvent Extraction Processes
- Adhesives
  - Adhesive Application
  - Solvent Mixing
  - Solvent Storage
  - Other Process Emissions (Specify)
- Graphic Arts
  - Letter Press
  - Rotogravure
  - Offset Lithography
  - Ink Mixing
  - Solvent Storage

OTHER SOURCES

- Waste Solvent Recovery Processes

estimating emissions form these sources by "scaling-up". Scaling-up generally requires that employment data be available for each point source and that an independent employment total be known for each source category (e.g., from County Business Patterns).

4. All emitting operations (points) within RACT and other VOC source categories should be accounted for in the inventory. These operations are summarized in Table 1 for the major sources of VOC.

5. All NO_x emissions should be accounted for in the inventory. NO_x emissions are needed in city-specific EKMA because they (1) are directly used to calculate post-8 a.m. concentrations along each modeling trajectory and (2) are used to determine relative changes in NO_x in the projection year. A detailed breakout of NO_x emissions by source category is not necessary to meet these emissions requirements. The major point sources of NO_x are included in Table 2.

6. Emissions are best determined for most solvent-using facilities by material balance techniques. Thus, solvent consumption data should be solicited from these sources. Generally, emissions can be assumed equal to solvent consumption with two exceptions: (1) where a destructive control device is used (e.g., an incinerator) or (2) where some fraction of the solvent is recycled to a waste solvent recovery plant.

7. A major source of VOC is petroleum product (particularly gasoline) storage and marketing operations. The emission factors for these operations must be adjusted upward to reflect higher summertime temperatures. The Reid Vapor Pressure of gasoline is typically lower in the summer, which tends to lower emissions.

8. Only reactive VOC should be included in the inventory. Nonreactive compounds that should be excluded from the inventory for purposes of ozone SIPs are:

methane
ethane
methylene chloride
methyl chloroform
trichlorotrifluoroethane (CFC-113)
trichlorofluoromethane (CFC-11)
dichlorodifluoromethane (CFC-12)
chlorodifluoromethane (CFC-22)
trifluoromethane (FC-23)
dichlorotetrafluoroethane (CFC-114)
chloropentafluoroethane (CFC-115)

All combustion processes emit methane and lesser amounts of ethane. The Volatile Organic Compound (VOC) Species Data Manual (EPA-450/4-80-015, Second Edition) may be used as a reference for excluding these nonreactive compounds. The major industrial source of halogenated compounds is degreasing. During plant contacts, information should be obtained on the types of solvents used

TABLE 2

MAJOR POINT SOURCES OF NITROGEN OXIDES

EXTERNAL FUEL COMBUSTION

- Utility Boilers
- Industrial Boilers
- Commercial/Institutional

STATIONARY INTERNAL COMBUSTION

- Reciprocating Engines
- Gas Turbines

INDUSTRIAL PROCESSES

- Chemical Manufacturing
  - Adipic Acid
  - Nitric Acid
  - Other
- Iron and Steel
- Mineral Products
  - Cement
  - Glass
  - Other
- Petroleum Refining
- Other

INCINERATION

in each degreasing operation so that the nonreactives can be excluded. The VOC Species Manual may also be used for this purpose. Generally, all petroleum products are composed entirely of reactive compounds.

9. Point source emissions typically represent annual levels in most State and local agency inventories. Annual emissions must be adjusted to represent typical summer weekday emissions. The best way to do this is to develop multipliers based on the seasonal and daily operating data typically coded into each point source record. If point-specific operating data are not available, reasonable operating patterns should be assumed based on data available for similar sources in the inventory.

AREA SOURCE CONSIDERATIONS

1. All sources shown in Table 3 should be included in the area source inventory. Any other sources of local significance should be included.

2. To the maximum extent possible, area source activity levels should be based on local survey data rather than National or State data (apportioned to the local level), per capita factors, etc. Miscellaneous consumer/commercial solvent use is the only area source category that EPA strongly recommends not be determined locally (see 4 below).

3. The inventorying agency should always try to obtain local gasoline sales data to estimate emissions from gasoline marketing. Nonretail outlets should not be overlooked. Local percentages of splash, submerged, and balance filling should be determined. As a crosscheck, 400 to 800 gallons per person per year represent typical gasoline usage. All gasoline emissions are reactive. Emissions from underground tank breathing and trucks in transit should be included.

4. National per capita factors are available in Volume I to estimate (or crosscheck) reactive VOC emissions from the following area source categories.

i. Small Cold Cleaning (degreasing) - 3 lb/capita-yr

Note: Open top vapor and conveyerized cleaners are not covered by this factor.

ii. Dry Cleaning - 1.2 lb/capita-yr (commercial plants)
0.3 lb/capita-yr (coin-op plants)
1.5 lb/capita-yr (total)

Note: Industrial plants are not covered by these factors.

iii. Architectural Surface Coating - 4.6 lb/capita-yr

Note: This includes thinning and cleanup solvent.

iv. Automobile Refinishing - 1.9 lb/capita-yr

Note: Where employment information for SICs 7531 and 7535 is available, EPA recommends applying a factor of 2.6 ton/employee-yr to employment rather than applying a per capita factor.

TABLE 3
MAJOR AREA SOURCES OF VOC AND NO_x

Evaporative Loss -

Gasoline Service Stations (and other outlets)
- Tank truck unloading (Stage I)
- Vehicle fueling (Stage II)
- Storage tank breathing losses

Solvent Users
- Degreasing, small industrial/commercial
- Drycleaning
- Surface coatings
  - Architectural
  - Auto body refinishing
  - Other small industrial
- Graphic arts
- Commercial/consumer solvent use
- Cutback asphalt
- Pesticides

Combustion -

Stationary Source Fossil Fuel Combustion (by fuel type)
- Residential
- Commercial/institutional
- Industrial

Non-highway Mobile Sources
- Aircraft (Military, civil, commercial)
- Railroad locomotives
- Vessels
- Off highway vehicles

Solid Waste Disposal
- On site incineration
- Open burning
- Structural fires
- Field/slash/forest fire burning

v. Graphic Arts (printing) - 0.8 lb/capita-yr

Note: This per capita factor covers < 100 ton per year solvent users, and assumes ≥ 100 TPY sources are covered as point sources.

vi. Miscellaneous Consumer/Commercial Solvent - 6.3 lb/capita-yr

Note: This factor is not a catchall to compensate for missing industrial solvent use not covered in the point source inventory.

Where certain of these sources have been covered in the point source inventory, the emissions associated therewith should be subtracted from the emission totals estimated by these per capita factors.

5. Information will have to be obtained from the local highway department on the quantities of rapid cure, medium cure and slow cure cutback asphalts used in the area. If known, the solvents contents of each type of cutback should be obtained as well as the seasons of application. Caution: some emulsified asphalts may contain small amounts of cutbacks. If so, some RVOC will result from the applications of emulsions.

6. Local sources will have to be contacted to determine pesticide usage. Only formulas made of or derived from pertrolum products will emit RVOC. Inorganic pesticides are not of interest in the inventory. Don't confuse the terms "biologically active" and "photochemically reactive". Many biologically inert ingredients as well as biologically active ingredients will be photochemically reactive. The main uses of pesticides are agricultural and municipal. As a rough crosscheck, 2 to 5 lb/yr-harvested area will be applied in agricultural applications. About 90 percent of the pesticides evaporate and are is considered photochemically reactive.

7. Local sources should be contacted to get activity level information on airports, railroads, vessels, off highway fuel use, solid waste disposal and small stationary source fossil fuel use. Don't forget to subtract any point source fuel use from the area source totals.

GROWTH/SIP STRATEGY PROJECTIONS

1. A projected attainment year should be determined as early as possible so that appropriate growth factors can be obtained.

2. Two projection year inventories are required for the 1982 SIP submittal. A baseline projection is necessary, which considers growth to the attainment year as well as the effect of already scheduled control measures. (Note: some measures may be "on-the-books" but may not take effect until a later date. The effects of these measures would be included in the baseline projection.) A SIP strategy projection would also include the effect of additional controls committed to in the 1982 SIP.

3. Whenever possible, growth projections for large point sources should be solicited from the sources themselves rather then by applying surrogate

indicators of growth. Likewise, information on anticipated control measures is best determined from the sources themselves. Less accuracy will result if general growth factors and control efficiences are applied across-the-board.

4. Presumed control efficiencies from many RACT sources are available in EPA's Control Techniques Guidelines (CTG's). Be careful to only apply these control efficiencies to those operations subject to RACT. Many operations within these facilities are not subject to RACT.

QUALITY ASSURANCE

1. The SIP inventories should be quality assured by the responsible agencies and the Regional Offices. A discussion of the quality assurance procedures should be included in the documentation along with the final inventory submittals.

2. An example writeup of a quality assurance program is contained in Example Emission Inventory Documentation for 1982 Ozone State Implementation Plans (SIPs) (EPA-450/4-80-033).

3. Quality assurance of inventories involves three basic types of steps. These are itemized and discussed briefly below.

A. Completeness Checks - These types of checks assure that all major sources are included in the inventory and that all operations within these major sources are identified. Items 2 through 5 under "Point Source Considerations" and Item 1 under "Area Source Considerations" involve completeness checks, and thus are not repeated here.

B. Procedural Checks - These types of checks assure that EPA recommended methods are followed in developing the inventories. Such checks include initial reviews of workplans, ongoing review of the inventory process, and "after-the-fact" review of inventory documentation. EPA requirements and recommended methods are set forth in the references cited earlier in this checklist.

C. Accuracy Checks - These types of checks assure that all data collected are reasonable. One such check involves manual review of the inventory data to detect apparent anomalies. A second type of accuracy check involves computerized editing of the data. In this latter approach, edit checks programs would compare each data field to a user-prescribed range of values and could also compare various fields for internal consistency.

NECESSARY ELEMENTS OF THE 1982 OZONE SIP INVENTORY SUBMITTALS

1. A base year inventory of reactive VOC and NO_x emissions in summary table format shown in Table 4. Emissions shall be seasonally adjusted to represent typical summer weekday totals. The emissions summarized in Table 4 shall represent totals for (1) the entire nonattainment area and (2) for each modeling analysis area, in cases where only a portion(s) of the nonattainment area is being modeled. The base year inventory and documentation are due to be completed and submitted to the EPA Regional Office no later than December 31, 1981.

TABLE 4

Summary Table of Reactive VOC Emissions*
-for (geographical area)

	Base Year		Baseline Projection		SIP Strategy	
	1980		Attainment year		Attainment year	
	Point	Area	Point	Area	Point	Area
STORAGE, TRANSPORTATION AND MARKETING OF VOC						
Oil and Gas Production & Processing						
Gasoline and Crude Oil Storage[1]						
Synthetic Organic Chemical Storage & Transfer						
Ship and Barge Transfer of VOC						
Barge and Tanker Cleaning						
Bulk Gasoline Terminals[2]						
Gasoline Bulk Plants[3]						
Service Station Loading (Stage I)						
Service Station Unloading (Stage II)						
Others (Specify)						
INDUSTRIAL PROCESSES						
Petroleum Refineries						
Lube Oil Manufacture						
Organic Chemical Manufacture						
Inorganic Chemical Manufacture						
Fermentation Processes						
Vegetable Oil Processing						
Pharmaceutical Manufacture						
Plastic Products Manufacture						
Rubber Tire Manufacture						
SBR Rubber Manufacture						
Textile Polymers & Resin Manufacture						
Synthetic Fiber Manufacture						
Iron and Steel Manufacture						
Others (Specify)						
INDUSTRIAL SURFACE COATING						
Large Appliances						
Magnet Wire						
Automobiles						
Cans						
Metal Coils						
Paper						
Fabric						
Metal Wood Products						
Miscellaneous Metal Products						
Plastic Parts Painting						
Large Ships						
Large Aircraft						
Others (Specify)						

*Kilograms per day (kg/day) for a typical summer weekday

TABLE 4 (CTD.)

	Base Year		Baseline Projection		SIP Strategy	
	1980		Attainment year		Attainment year	
	Point	Area	Point	Area	Point	Area
NON-INDUSTRIAL SURFACE COATING						
Architectural Coatings						
Auto Refinishing						
Others (Specify)						
OTHER SOLVENT USE						
Degreasing						
Dry Cleaning						
Graphic Arts						
Adhesives						
Cutback Asphalt						
Solvent Extraction Processes						
Consumer/Comercial Solvent Use						
Others (Specify)						
OTHER MISCELLANEOUS SOURCES						
Fuel Combustion						
Solid Waste Disposal						
Forest, Agricultural, and Other Open Burning						
Pesticide Application						
Waste Solvent Recovery Processes						
Stationary Internal Combustion Engines						
MOBILE SOURCES						
Highway Vehicles						
a) Light Duty Automobiles						
b) Light Duty Trucks						
c) Heavy Duty Gasoline Trucks						
d) Heavy Duty Diesel Trucks						
e) Motorcycles						
Off-Highway Vehicles						
Rail						
Aircraft						
Vessels						
Total						

[1] Includes all storage facilities except those at service stations and bulk plants.

[2] Emissions from loading tank trucks and rail cars.

[3] Emissions from storage and transfer operations.

TABLE 4 (CTD.)

Summary Table for Oxides of Nitrogen Emissions*
for (geographical area)

	Base Year		Baseline Projection		SIP Strategy	
	1980		Attainment year		Attainment year	
	Point	Area	Point	Area	Point	Area
EXTERNAL FUEL COMBUSTION						
Utility Boilers						
Industrial Boilers						
Commercial, Institutional, Residential						
STATIONARY INTERNAL COMBUSTION						
Reciprocating Engines						
Gas Turbines						
INDUSTRIAL PROCESSES						
Chemical Manufacturing						
Adipic Acid						
Nitric Acid						
Other						
Iron and Steel						
Mineral Products						
Cement						
Glass						
Other						
Petroleum Refining						
Other						
INCINERATION AND OPEN BURNING						
MOBILE SOURCES						
Highway Vehicles						
Light Duty Automobiles						
Light Duty Trucks						
Heavy Duty Gasoline Trucks						
Heavy Duty Diesel Trucks						
Motorcycles						
Off-highway Vehicles						
Rail						
Aircraft						
Vessels						
Total						

*Kilograms per day (kg/day) for a typical summer weekday

2. A listing of > 250 kg/day point sources of reactive VOC in the nonattainment area, reported by major category and principal operations (see Table 5). This listing shall be for the base year only and should be included in the base year inventory submittal.

3. A base line attainment year inventory of reactive VOC and NO_x emissions in summary table format (i.e., Table 4). Emissions shall be seasonally adjusted to represent typical summer weekday totals. The emissions summarized in Table 4 shall represent totals for (1) the entire nonattainment area and (2) for each modeling analysis area. The base line attainment year inventory and documentation are due to be completed and submitted to the EPA Regional Office no later than December 31, 1981.

4. A "1982 SIP Strategy" attainment year inventory of reactive VOC and NO_x in summary table format (i.e., Table 4). Emissions shall be seasonally adjusted to represent typical summer weekday totals. The emissions summarized in Table 4 shall represent totals for (1) the entire attainment year inventory and (2) for each modeling analysis area. The SIP strategy attainment year inventory and documentation are due to be completed and submitted to the EPA Regional Office no later than July 31, 1982.

5. A report that documents the procedures, data and assumptions used in compiling the emission inventories. Documentation for the base year, base line attainment, and SIP strategy inventories shall accompany the respective inventory submittals.

6. Projected reasonable further progress (RFP) need not be included with the SIP inventory submittals.

7. States may submit equivalent formats to those shown in Tables 4 and 5 if approval is obtained from the Regional Office and if the alternative formats still allow EPA to directly evaluate and compare emission reductions for each source category resulting from the various RACT measures.

TABLE 5

Principal Emitting Operations at Point Sources of Reactive VOC Emissions* for (geographical area)

Name and Location _____

Major Reactive VOC Source Category _____

Principal Operations	Emissions*

*Kilograms per day (kg/day) for a typical summer weekday, in the base year